

**National Science Education Standards, Grades 5–8
by the National Research Council, 1996**

	Basic Skills			
Science Standard	Altimeter angles	Flagpole height	Structure estimation	NASA connection
Unifying Concept and Processes				
Evidence, models, and organization				●
Change, constancy, and explanation	●	●	●	
Science as Inquiry				
Abilities necessary to do scientific inquiry	●	●	●	
Understanding scientific inquiry				●
Physical Science				
Motions and forces				●
Transfer of energy				●
Science and Technology				
Understanding science and technology			●	●
Science in Personal and Social Perspectives				
Risk and benefits				●
Science and technology in society				●
History and Nature of Science				
Nature of science				●
History of science				●

**Mathematics Principles and Standards for Schools, Grades 6–8
by the National Council of Teachers of Mathematics, 2000**

	Basic Skills			
Mathematics Standard	Altimeter angles	Flagpole height	Structure estimation	NASA connection
Number and Operations				
Representing numbers		●	●	
Meanings of operations	●	●		
Compute fluently	●	●	●	
Algebra				
Mathematical models	●	●		
Geometry				
Apply transformation	●	●		
Use visualization	●	●	●	●
Measurement				
Measurable attributes	●	●	●	
Appropriate techniques, tools, formulas	●	●	●	
Problem Solving				
Build new math knowledge	●	●	●	●
Solve problems that arise	●	●	●	
Apply appropriate strategies	●	●	●	
Connections				
Apply math in contexts outside of math	●	●	●	●
Representation				
Use representations to model world phenomena		●	●	●



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	Classroom Activities							
Science Standard	Collisions Part 1	Collisions Part 2	Marble Run Part 1	Marble Run Part 2	Marble Run Part 3	Marble Run Part 4	Pendulums Part 1	Pendulums Part 2
Unifying Concept and Processes								
Systems, order, and organization	●	●	●	●	●			
Evidence, models, and organization	●	●	●	●	●	●	●	●
Change, constancy, and explanation	●	●	●	●	●	●	●	●
Evolution and equilibrium	●	●						
Science as Inquiry								
Abilities necessary to do scientific inquiry	●	●	●	●	●	●	●	●
Understandings about scientific inquiry	●	●	●	●	●	●	●	●
Physical Science								
Motions and forces	●	●	●	●	●	●	●	●
Transfer of energy		●	●		●			

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	Classroom Activities							
Mathematics Standard	Collisions Part 1	Collisions Part 2	Marble Run Part 1	Marble Run Part 2	Marble Run Part 3	Marble Run Part 4	Pendulums Part 1	Pendulums Part 2
Number and Operations								
Representing numbers				●	●		●	●
Meanings of operations				●	●		●	●
Compute fluently				●	●		●	●
Algebra								
Patterns				●	●			
Represent and analyze				●	●			
Mathematical models	●	●		●	●		●	●
Analyze change				●	●			
Geometry								
Apply transformation				●	●			
Use visualization				●	●			
Measurement								
Measurable attributes				●	●		●	●
Appropriate techniques, tools, formulas				●	●		●	●
Data Analysis and Probability								
Select and use statistical methods					●	●	●	●
Develop and evaluate					●		●	●
Problem Solving								
Build new math knowledge				●	●		●	●
Solve problems that arise	●	●	●	●	●	●	●	●
Apply appropriate strategies	●	●	●	●	●	●	●	●
Connections								
Apply math in contexts outside of math				●	●		●	●
Representation								
Use representations to model world phenomena	●	●		●	●		●	●



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	Ride Worksheets						
Science Standard	Bumper Cars: Collisions	Carousel	Free-Fall Ride	Pendulum Ride	Roller Coaster: Floater Hills	Roller Coaster: Initial Hill	Roller Coaster: Loop
Unifying Concept and Processes							
Systems, order, and organization	●	●	●	●	●	●	●
Evidence, models, and organization	●	●	●	●	●	●	●
Change, constancy, and explanation	●						
Science as Inquiry							
Abilities necessary to do scientific inquiry	●	●	●	●	●	●	●
Understanding scientific inquiry	●	●	●	●	●	●	●
Physical Science							
Motions and forces	●	●	●	●	●	●	●
Transfer of energy	●		●				

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	Ride Worksheets						
Mathematics Standard	Bumper Cars: Collisions	Carousel	Free-Fall Ride	Pendulum Ride	Roller Coaster: Floater Hills	Roller Coaster: Initial Hill	Roller Coaster: Loop
Number and Operations							
Representing numbers		●	●	●	●	●	
Meanings of operations		●	●	●	●	●	
Compute fluently		●	●	●	●	●	
Algebra							
Patterns		●		●	●	●	
Represent and analyze				●	●	●	
Mathematical models						●	
Analyze change						●	
Geometry							
Apply transformation			●	●	●	●	
Use visualization			●	●	●		
Measurement							
Measurable attributes		●	●	●	●	●	
Appropriate techniques, tools, formulas		●	●	●	●	●	
Data Analysis and Probability							
Select and use statistical methods					●	●	
Problem Solving							
Build new math knowledge			●	●	●	●	
Solve problems that arise	●	●	●	●	●	●	●
Apply appropriate strategies	●	●	●	●	●	●	●
Connections							
Apply math in contexts outside of math		●	●	●	●	●	
Representation							
Use representations to model world phenomena			●	●	●	●	

